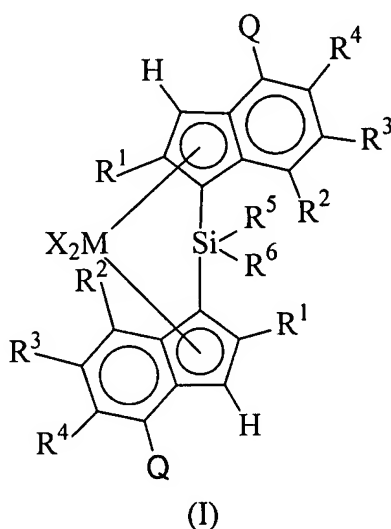


## AMENDMENTS TO THE CLAIMS

1. (currently amended) A process for producing a polymer of ethylene containing from ~~0.1 to 99%~~ 5% to 40% by mol of derived units of at least one alpha-olefin of formula  $\text{CH}_2=\text{CHA}$ , wherein A is a  $\text{C}_2\text{-C}_{20}$  alkyl radical and optionally up to 5% by mol polyene, comprising contacting, under polymerization conditions, ethylene, at least one alpha-olefin and optionally said polyene, in the presence of a non-supported catalyst system obtained by contacting:
  - a) a metallocene compound of formula (I):



wherein

M is zirconium, titanium or hafnium;

X, equal to or different from each other, is a hydrogen atom, a halogen atom, a R, OR, OR'O,  $\text{OSO}_2\text{CF}_3$ ,  $\text{OCOR}$ , SR,  $\text{NR}_2$  or  $\text{PR}_2$  group, wherein the R substituents are linear or branched, saturated or unsaturated  $\text{C}_1\text{-C}_{20}$ -alkyl,  $\text{C}_3\text{-C}_{20}$ -cycloalkyl,  $\text{C}_6\text{-C}_{20}$ -aryl,  $\text{C}_7\text{-C}_{20}$ -alkylaryl or  $\text{C}_7\text{-C}_{20}$ -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements; and the R' substituent is a  $\text{C}_1\text{-C}_{40}$ -alkylidene,  $\text{C}_6\text{-C}_{40}$ -arylidene,  $\text{C}_7\text{-C}_{40}$ -alkylarylidene or  $\text{C}_7\text{-C}_{40}$ -arylalkylidene;

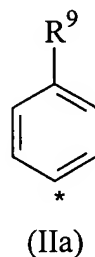
$\text{R}^1$ , equal to or different from each other, are a linear or branched  $\text{C}_1\text{-C}_{20}$ -alkyl radical;

$\text{R}^2$ , equal to or different from each other, is a hydrogen atom or a linear or branched, saturated or unsaturated  $\text{C}_1\text{-C}_{20}$ -alkyl radical;

$R^3$  and  $R^4$ , equal to or different from each other, are hydrogen atoms or linear or branched, saturated or unsaturated  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl or  $C_7$ - $C_{20}$ -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements; or they can form together a condensed saturated or unsaturated 5 or 6 membered ring, optionally containing at least one heteroatom belonging to groups 13-16 of the Periodic Table of the Elements, said ring optionally bearing at least one substituent;

$R^5$  and  $R^6$ , equal to or different from each other, are hydrogen atoms or linear or branched, saturated or unsaturated  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl or  $C_7$ - $C_{20}$ -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements; or they can form together a condensed saturated or unsaturated 5 or 6 membered ring, optionally containing at least one heteroatom belonging to groups 13-16 of the Periodic Table of the Elements, said ring optionally bearing at least one substituent;

Q is a radical of formula (IIa) which is bonded to the indenyl at the position marked by the symbol \*;



wherein

$R^9$  is a group of formula  $C(R^{12})_3$  wherein  $R^{12}$ , same or different, is a linear or branched, saturated or unsaturated  $C_1$ - $C_6$ -alkyl radical; and

- b) an alumoxane.
2. (original) The process according to claim 1 wherein the catalyst system further comprises an organo aluminum compound.

3. (previously presented) The process according to claim 1 wherein in the compound of formula (I), X is a halogen atom, a R, OR'O or OR group; R<sup>3</sup> and R<sup>4</sup> are hydrogen atoms, methyl or they form a condensed saturated or unsaturated 5 or 6 membered ring; and R<sup>5</sup> and R<sup>6</sup> are C<sub>1</sub>-C<sub>20</sub>-alkyl or C<sub>6</sub>-C<sub>20</sub>-aryl radicals.

Claims 4-12 canceled

- 13 (previously presented) The process according to claim 1 wherein the alpha-olefin is 1-butene, 1-pentene, 4-methyl-1-pentene, 1-hexene, 1-octene, 4,6-dimethyl-1-heptene, 1-decene, 1-dodecene, 1-tetradecene, 1-hexadecene, 1-octadecene or 1-eicosene.
14. (previously presented) The process according to claim 13 wherein the alpha-olefin is 1-pentene, 1-hexene or 1-octene.